



International Civil Aviation Organization

**THE EIGHTH MEETING OF AERONAUTICAL
TELECOMMUNICATION NETWORK (ATN)
IMPLEMENTATION CO-ORDINATION GROUP
OF APANPIRG (ATNICG/8)**

Jakarta, Indonesia, 18 - 21 March 2013



Ministry Of Transportation
Republic of Indonesia

Agenda Item 5: Outcome of AN-Conf/12 on System Wide Informatin Management (SWIM)

UPDATED STATUS OF SWIM OPERATIONAL CONCEPT

(Presented by USA)

SUMMARY

This paper conveys status of the status of the ATNICG WG/11 Conclusion 23/21 – IMS Operational Concept

That, ICAO be invited to

- a) develop IMS Operational Concept and expedite finalization of IPv6 network configuration; and
- b) conduct cost-benefit analyses for the implementation of an IPv6 network and IMS/SWIM at regional level.

The FAA presented this conclusion and associated paper at the ACP WG I/16 held in Montreal 28-30 January 2013 to convey Asia/Pacific region in support of SWIM environment as presented in ANC-12 held in November 2012. It was supported by ACP WG I/16 and ANC-12 set the priority of SWIM Operational Concept development as their top five actions to be presented at ICAO Assembly to be held in September 2013.

This paper relates to:

Strategic Objectives:

C: Environmental Protection and Sustainable Development of Air Transport – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment

Global Plan Initiatives:

GPI 22 – Communication Infrastructure

1. INTRODUCTION

1.1 At the ATNICG WG/11, the FAA presented a Working Paper to convey the implementation issues in supporting the SWIM environment as projected by ICAO ANC-12.

1.2 The WP presented two major concerns: Underlined IP network to support seamless data distribution and SWIM concept of operation that is needed to develop the service and governance.

1.3 The FAA was asked to present ATNICG WG/11 Conclusion 23/21 to the ACP WG I/16 held in January 2013 to determine a solution. ACP WG I/16 concurred with ATNICG and conveyed it to ANC members.

1.4 As the result, ANB has developed a draft Projects Prioritization that lists SWIM Operational Concept a top priority to be presented at the ICAO Assembly in September 2013 as shown in **Attachment A**.

1.5 The IPv6 underlined network was also presented at the ACP WG I/16 as well as the proposed Asia/Pacific Multiprotocol Labels Switching (MPLS) network as a solution to support global Ipv6 network. It was agreed that the FAA will develop Transition Guideline to support IPv6 implementation using either BGP-4 or MPLS. The Transition Guideline will be reviewed at the ACP WG I/17 to be held in November 2013 before incorporated into ICAO Doc 9896.

2. DISCUSSION

2.1 Information Management Service (IMS) or SWIM was presented at the ANC-12 as the future for global AFS. This recommendation is based on the assumption that global IP network using Ipv6 should be ready by approximately 2020 for SWIM functions can be implemented.

2.2 IMS/SWIM is considered an environment that has to be incorporated into existing AFS infrastructure before its functions can be optimized. This means the SWIM functions and associated services or messages have to be identified for integration and upgraded. The first step is to develop SWIM Operational Concept, then identify associated message/service for integration/upgrade.

2.3 After SWIM Operational Concept become available, then the ATNICG needs to develop a regional SWIM Governance.

2.4 Asia/Pacific also is required to plan and an implement a dynamic IP network to support future SWIM environment as well as enhance AFS such as Regional Directory Service and Extended AMHS service as specified in ICAO Doc 9880/9896.

2.5 Therefore, it is recommended that ATNICG to develop ICAO Job Card as shown in **Attachments B** and **C** to convey our recommendation to ANB and upcoming ICAO Assembly through APANPIRG.

3. RECOMMENDED ACTIONS

3.1 The meeting is invited to:

- a) note the outcome of ANC-12 relating to SWIM Operational Concept Projects Prioritization;
- b) note the outcome of ACP WG I/16 relating to IP Network and SWIM Operational Concept;
- c) develop ICAO Job Card for SWIM Operational Concept; and
- d) consider a common IP network in the region to replace point-to-point circuits

ANB Projects Prioritization

by Alternate Score (80% of Voting Score [No Resource])

Project	PROJECT ID	Alternate Score	Voting Score	Multiplier Score	Alternate Rank	Voting Rank	Multiplier Rank
3.2 & 3.3 Develop SWIM concept & Provisions	AN12	63.3	77.8	1,555.6	1	6	6
2.3 Security of Air Navigation	AN12	62.1	80.3	1,606.7	2	1	1
1.6 Multidisciplinary review of ATC comm requirements and issues	AN12	61.7	78.8	1,575.6	3	3	3
6.7 Continue technical evaluation of known threats to the global navigation satellite system, including space weather issues, and make the information available to States	AN12	61.6	78.0	1,560.0	4	5	5
Identify potential gaps in safety regulations by developing and analysing information from a centralized dangerous goods incident and accident reporting system	DGS	61.4	79.6	1,592.5	5	2	2
1.11b Develop performance-based requirements for ATM automation systems so systems are interoperable	AN12	61.3	78.5	1,570.0	6	4	4
6.5 Continue development of SARPs and guidance for existing and future global navigation satellite system elements and encouraging the development of industry standards for avionics.	AN12	58.1	75.7	1,513.3	7	7	7
Allow the safe integration of remotely piloted aircraft (RPA) by developing the regulatory framework to support operations in non-segregated airspace and at aerodromes	ATM	57.8	72.5	1,450.0	8	12	12
2.6 Develop ICAO provisions for PBN for terminal and approach operation	AN12	57.5	74.2	1,484.4	9	9	9
4.6c,d As a matter of urgency, develop the necessary regulatory framework in its entirety to support the integration of RPA into non-segregated airspace and at aerodromes including and clearly showing the scope of such regulation	AN12	57.2	71.8	1,435.6	10	13	13
Establish the safe implementation of displays and vision systems in aircrafts by establishing standards and guidance material	OPS	57.1	74.8	1,496.7	11	8	8
1.12 Develop a comprehensive aviation frequency spectrum strategy	AN12	56.4	72.9	1,457.8	12	10	10
4.1d,e,f Standardization of elements to support CDM process underlying ATFM integration as well as of the technical exchanges between ATFM and ATC	AN12	55.9	70.2	1,404.4	13	16	15
Improve the safety of flight operations by establishing requirements for cargo compartment fire suppression systems	OPS	55.7	72.7	1,453.3	14	11	11
To improve GNSS constellation availability and performance by introducing multiple GNSS constellations and frequencies of operations. (Infrastructure/PBN)	IIM	53.3	70.6	1,412.5	15	15	14
1.14b ICAO and Member States pursue this matter [VSAT] in the ITU-R and during the WRC-15, to prevent any international mobile telecommunications spectrum allocation that compromises the availability of the aeronautical very small aperture terminal networks	AN12	53.0	71.2	1,139.6	16	14	64
Enhance air traffic management through consideration of four dimension trajectories - Latitude/ Longitude/ Altitude/ Time (TBO). (B1-40)	ATM	52.1	66.1	1,322.9	17	22	21
Increase safety by ensuring forbidden dangerous goods do not enter the airmail stream through collaboration with the Universal Postal Union (UPU).	DGS	51.8	68.7	1,374.3	18	17	16
Enhance air traffic management through the sharing of information by creating interoperable standards for information exchange (SWIM) (B1-31)	ATM	51.7	65.6	1,312.5	19	23	22
6.9 Space weather : ICAO coordinate regional and global activities; address GNSS vulnerabilities to space weather; and optimum use of space weather information	AN12	51.6	67.5	1,350.0	20	20	19
Improve levels of safety and security by harmonizing data link procedures to support seamless operations with respect to both surveillance and air-ground communications	ATM	51.4	65.6	1,312.5	21	23	22
6.2 ICAO develop an appropriate set of operation and economic incentive principles ...	AN12	51.1	65.3	1,306.7	22	28	27
1.11a Develop global roadmap for evolution of ground ATM automation systems in line with ASBUs	AN12	51.0	65.4	1,308.0	23	27	26
Improve flight trajectory optimization and safety through the enhancement of the satellite distribution system and Internet-based service.	MET	50.4	67.9	1,357.1	24	18	17
Promote interagency working arrangements with other agencies of the United Nations in the development of harmonised, multi-modal transport provisions for dangerous goods	DGS	50.2	65.6	1,312.5	25	23	22
2.2 Develop provisions for remotely operated ATS	AN12	49.8	63.9	1,277.8	26	37	36
1.8 Explore strategies for decommissioning of some nav aids and ground stations...	AN12	49.8	66.8	1,336.0	27	21	20
Reduction of runway excursions by effective runway surface condition assessment and friction reporting	AGA	49.7	67.9	1,357.1	28	18	17
Reduce Loss of Control in-flight (LOC-I) accidents by providing training and licensing requirements, procedures and guidance.	OPS	49.6	63.0	1,260.0	29	41	40
Reduce loss of control events through enhanced management of cognitive and physiological responses associated with unexpected events	OPS	49.6	63.0	1,260.0	29	41	40
1.9 Develop SARPs and guidance to support space-based ADS-B	AN12	49.4	64.0	1,280.0	31	36	35
Improve safety and efficiency through collaborative demand and capacity balancing and flow management procedures. (ATFM) (B0-35)	ATM	49.3	63.0	1,260.0	32	41	40
Promote interoperability and efficiency through the enhancement of provisions ensuring the exchange of meteorological information in a digital form compatible with SWIM	MET	49.3	65.1	1,302.9	33	30	29

ANB Projects Prioritization

by Alternate Score (80% of Voting Score [No Resource])

Project	PROJECT ID	Alternate Score	Voting Score	Multiplier Score	Alternate Rank	Voting Rank	Multiplier Rank
Improve flight safety and efficiency through the further development of provisions that support the automated exchange of meteorological information to and from the cockpit via data link.	MET	49.3	65.1	1,302.9	33	30	29
Enhance surface situational awareness and improve runway safety and efficiency by using surface sequencing using ADS-B (B1-75 SURF/SURF IA)	IIM	49.0	65.3	1,305.7	35	29	28
Enhance States' capabilities in investigations by the availability of recorded video of the cockpit area.	AIG	48.8	64.3	1,285.0	36	35	34
Enhance safety and efficiency through standardization of information management. (B1-30)	ATM	48.7	64.5	1,290.0	37	34	33
Development of Flight Procedure, NAV database and charting requirements	ATM	48.6	64.8	1,295.0	38	32	31
Develop or amend policies, SARPs and related guidance to facilitate the increased exchange of safety information. Assure an appropriate level of protection for safety data and accident/incident information.	ISM	48.6	63.9	1,277.1	39	38	37
6.4 e) Establish provisions for fatigue risk management within ATC operations.	AN12	48.5	64.7	1,293.3	40	33	32
Establish the safe use and approval of electronic flight bags (EFBs) in aircrafts by establishing standards and guidance material	OPS	48.3	62.8	1,256.7	41	44	43
Enhance safety and efficiency by improving the exchange of flight and flow information (FF-ICE) (B1-25)	ATM	48.0	61.0	1,220.0	42	53	51
Improve efficiency by introducing GNSS-based all-weather operations (Cat II/III) supported by GBAS (B1-65)	IIM	47.9	63.1	1,262.5	43	40	39
Increase safety, efficiency and capacity by developing globally harmonized PBN specification standards that meet operational requirements.	ATM	47.6	63.5	1,270.0	44	39	38
Mitigate the hazards posed by space weather phenomena on international air navigation through the development of provisions for space weather information/services.	MET	47.3	62.3	1,245.7	45	46	45
Facilitate approaches with vertical guidance by improving the operational benefits through eliminating confusion, extending the use to non-instrument runways and applying a performance-based approach for runway infrastructure.	ATM	47.3	62.4	1,247.5	46	45	44
Mitigate consequences of aircraft overrunning or undershooting a runway by developing performance-based provisions for runway end safety areas (RESA) and arresting systems	AGA	47.2	65.6	1,311.4	47	26	25
Enhance airport capacity by promoting A-CDM	AGA	46.5	61.8	1,235.0	48	47	46
Improve flight trajectory optimization and safety through the enhancement of provisions relating to volcanic ash in the atmosphere.	MET	46.4	61.6	1,231.4	49	49	48
Ensure air navigation capacity and efficiency by integrating advances in technology and requirements for NexGen/SESAR in Aeronautical Information Services SARPs, related procedures and guidance material (B0-30, B1-30)	IIM	46.0	61.5	1,230.0	50	50	49
4.1g ICAO develop further provisions and guidance on flexible use of airspace principles for future use and in preparation for future 4d trajectory-based airspace management	AN12	45.9	61.3	981.3	51	52	95
Safer and efficient aerodrome operational management using PANS-Aerodromes	AGA	45.8	60.4	1,208.6	52	56	54
6.4 a) c) and d) Integrate human performance as an essential element for implementation of ASBU modules for considerations in the planning and design phase of new systems and technologies, as well as at the implementation phase, as part of a safety management approach.	AN12	45.7	56.2	1,123.3	53	74	71
4.7e Define meteorological information exchange model as an enabler for system-wide information management	AN12	45.4	61.4	1,228.9	54	51	50
Validate the MPL requirements by collecting implementation data and identifying areas where improvements are warranted through a proof of concept symposium	OPS	45.3	60.6	1,212.0	55	54	52
Improve flight trajectory optimization and safety through the enhancement of provisions relating to en-route hazardous meteorological conditions.	MET	44.9	60.6	1,211.4	56	55	53
Optimize the use of resources by States and the MRO industry by developing a harmonized approach to the approval and recognition of approved maintenance organization (AMO)	OPS	44.8	58.2	1,164.0	57	63	60
6.1 h) i) j) k) and l) ICAO to develop a mechanism for sharing of best practices, define a methodology, develop guidance material, ... how to foster implementation to deliver on benefit (roll out plan)	AN12	44.5	57.2	1,143.3	58	67	63
Improve safety of extended diversion time operations (EDTO) by including aeroplanes with more than two turbine engines	OPS	44.3	60.3	1,206.7	59	57	55
6.14 Guidelines for conducting aeronautical studies to assess permissible penetration of obstacle limitation surfaces	AN12	43.8	61.7	1,234.3	60	48	47
Improve operational safety and efficiency in the AFI region by establishing strategic and tactical operational mitigation measures.	ATM	43.5	59.0	944.0	61	58	105
Enhance passenger safety by improving cabin crew training provisions	OPS	43.5	58.3	1,166.7	62	62	59
Optimize airspace and aerodrome capacity and efficiency through the enhanced provision of meteorological information tailored to meet the needs of the ATM community.	MET	43.3	59.0	1,180.0	63	58	56
Optimize aerodrome capacity and improve safety through the enhancement of provisions relating to hazardous meteorological conditions at the aerodrome and in the terminal area.	MET	43.3	59.0	1,180.0	63	58	56

ANB Projects Prioritization

by Alternate Score (80% of Voting Score [No Resource])

Project	PROJECT ID	Alternate Score	Voting Score	Multiplier Score	Alternate Rank	Voting Rank	Multiplier Rank
Optimize aerodrome capacity through the enhancement of provisions relating to the use of technology for meteorological conditions reporting at the aerodrome.	MET	43.3	59.0	1,180.0	63	58	56
Improve the consistency of aircraft operations standards by aligning the provisions for General Aviation and Helicopters with Commercial Air Transport	OPS	42.9	57.2	1,143.3	66	66	62
Ensure the availability of safety information by strengthening its protection from inappropriate use.	AIG	42.9	56.5	1,130.0	67	69	66
Improved implementation of new technologies and systems by consideration of Human performance issues at design stage.	OPS	42.9	56.4	1,128.0	68	71	68
Reduce runway incursions by the development of provisions for visual aids for Advanced Surface Movement Guidance and Control Systems (A-SMGCS)	AGA	42.8	57.5	1,150.0	69	64	61
Ensure the availability of flight recorder data for States' investigations of unmanned aircraft systems through the development of relevant provisions.	AIG	42.3	57.5	920.0	70	64	109
Support the certification of composite aeroplanes by confirming that the design standards for airworthiness are still applicable for these new aircraft	OPS	42.2	56.0	1,120.0	71	75	72
3.9 Review current NOTAM system	AN12	42.0	54.8	1,095.6	72	82	78
4.3g ICAO incorporate ACAS X into its ICAO programme	AN12	41.9	55.0	1,100.0	73	80	76
4.7d Develop air traffic management meteorological information integration plan	AN12	41.9	55.0	1,100.0	73	80	76
Maximize efficiencies of flight operations over oceanic airspace, ensuring coincident improvements to levels of ATM security, by provision of direct, air-ground, voice communications via satellite	ATM	41.8	56.3	1,125.0	75	72	69
Prevent runway incursions by utilizing proper naming conventions for designating taxiways, taxi lanes and runway and intermediate holding positions	AGA	41.7	55.8	1,115.0	76	77	74
Provide access to optimum flight levels for aircrafts in oceanic airspace by establishing in-trail procedures using ADS-B (B0-86 ITP)	IIM	41.5	56.3	1,125.0	77	72	69
6.13 Improve its project management and coordination of contributing ICAO panels, study groups and other groups tasked with the development of ICAO provisions, through: 1) consistent application of the Directives for Panels of the Air Navigation Commission (Doc 7984); 2) receiving regular reports from the expert groups against agreed terms of reference and work programmes; 3) mandating strong coordination between all expert groups developing ICAO provisions to ensure efficient management of issues and avoidance of duplication; 4) application of the principles of accountability, geographical representation, focus, efficiency, consistency, transparency and integrated planning to the operation of all the expert groups 5) developing documented procedures for other groups as well including task forces and other specialized teams as well ; and 6) better use of today's communication media and internet to facilitate virtual meetings, thereby increasing participation and reducing costs to States and ICAO;	AN12	41.5	54.1	1,082.9	78	85	81
Enhance global safety by further developing a new Annex dedicated to safety management processes and responsibilities.	ISM	41.5	55.9	1,117.1	79	76	73
Improve safety and efficiency of air transport by establishing standards and guidance material for fuel carriage.	OPS	41.1	56.8	1,136.7	80	68	65
4.3d,e,f Adopt coordinated approach towards reviewing and developing SARPs, PANS and guidance for ground-based and airborne safety nets	AN12	40.9	55.4	1,108.9	81	78	75
Reduce PBN separation/route spacing by using more realistic ATM and navigational error assumptions and developing ATM procedures for busy traffic scenarios.	ATM	40.6	54.8	1,095.0	82	83	79
Improve situational awareness and collision avoidance systems by establishing new provisions for Aeronautical Telecommunication standards and related guidance material.	IIM	40.2	51.3	1,025.7	83	96	90
Prevent fuel contamination by developing provisions on the proper receipt, storage and distribution of aviation fuel at airports for commercial transport aircraft.	AGA	40.2	54.6	1,092.5	84	84	80
Increase operational efficiency of aerodromes by the development of provisions for the implementation of light-emitting diode (LED) technology in visual aids	AGA	40.2	56.5	1,130.0	84	69	66
Enhance the management of safety by defining global metrics and analysis methods used in identifying safety performance and risks in the context of a State Safety programme.	ISM	39.8	52.4	1,048.6	86	91	85
4.5e Develop guidelines on flexible use of airspace, airspace design, integration of humanitarian assistance flights in crisis response scenarios to facilitate integrated use of the airspace	AN12	39.5	55.3	885.3	87	79	114
2.4 Optimize management of wake turbulence	AN12	39.2	52.9	740.4	88	89	125

ANB Projects Prioritization

by Alternate Score (80% of Voting Score [No Resource])

Project	PROJECT ID	Alternate Score	Voting Score	Multiplier Score	Alternate Rank	Voting Rank	Multiplier Rank
6.12 c) Continue work on guidance material for the categorization of block upgrade modules for implementation priority and provide guidance as necessary to PIRGs and States	AN12	38.9	53.9	1,077.1	89	86	82
Maintain current levels of safety by requiring RPAs with the capability to detect all operationally significant obstacles and weather. (B1-90)	IIM	38.4	49.0	980.0	90	101	96
Improve pilot/ATC response to communications failure episodes by reviewing and updating the communications failure provisions	ATM	38.4	52.0	1,040.0	91	92	86
Enhance States' resources in investigations by ensuring that recorded flight data transmissions are readily available for investigations.	AIG	38.1	52.8	1,055.0	92	90	84
1.15b Promote development of leading safety indicators to complement existing lagging safety indicators	AN12	38.0	51.6	1,031.1	93	93	87
Amend SARPs on the upper age limit for pilots, to improve clarity and to increase ease of application by States and airlines	MED	37.8	51.3	1,025.7	94	96	90
1.5 Define accuracy requirements for future use of a time reference. Prepare SARPs.	AN12	37.8	53.5	1,070.4	95	87	83
6.4 b) Develop guiding principles guidance material and provisions, including SARPs as necessary, on ATM personnel, licensing and training including instructors and licensing, and on the use of synthetic training devices,	AN12	37.7	48.7	973.3	96	106	100
Reduce aircraft gross navigational errors by establishing concise global guidelines, procedures and SARPs related to the naming of significant waypoints	ATM	37.7	51.5	1,030.0	97	94	88
Reduce human errors by providing a risk-based approach to managing aviation maintenance engineer fatigue.	OPS	37.5	51.3	1,026.7	98	95	89
Reduce human errors by providing a risk-based approach to managing Air Traffic Controller (ATC) fatigue.	OPS	37.4	50.0	1,000.0	99	100	94
Ensure air navigation capacity and efficiency by integrating advances in technology and requirements for NexGen/SESAR in Aeronautical charting SARPs and related guidance material (B0-30)	IIM	37.4	50.8	1,015.0	99	99	93
6.12e) Identify modules in Block 1 considered to be essential for implementation at a global level in terms of the minimum path to global interoperability and safety with due regard to regional diversity.	AN12	37.0	51.1	1,022.9	101	98	92
4.5d Develop a set of criteria or metrics to enable objective measurement of progress in civil/military cooperation	AN12	37.0	52.9	846.2	102	88	117
Reduce helicopter accidents/incidents by updating provisions for the design of heliports that take account of capabilities of modern helicopters	AGA	36.5	48.9	977.5	103	104	99
6.3 ICAO to develop a networkwide operational improvement level assesemnt for global use	AN12	36.1	45.2	903.3	104	117	111
6.11 Initiate a formal amendment process to align the areas of applicability of the air navigation plans and the regional supplementary procedures	AN12	36.0	49.0	980.0	105	101	96
Reduce pressure on communications systems used in the en-route and terminal environments by developing guidance and SARPs for a broadband datalink to be used on the airport surface (B1-15; B1-25; B1-105; B1-40)	IIM	36.0	49.0	980.0	105	101	96
Prevention of accidents/damages to aircraft due to ingestion of FODs through the use of emerging technologies	AGA	35.6	48.5	970.0	107	107	101
Promote safety management by providing standards for Safety Management Systems specific to organizations responsible for type design and manufacture of engine and propellers.	OPS	35.5	47.8	956.0	108	110	103
Enhanced aerodrome safety and efficiency with effective implementation of aerodrome certification	AGA	34.7	47.0	940.0	109	112	106
3.5d Investigate proposals for implementation of all PBN codes and other capabilities in the flight plan	AN12	34.7	47.0	940.0	110	112	106
Enhance States' resolution of safety concerns by expanding guidance material on safety recommendations.	AIG	34.6	47.3	945.0	111	111	104
Expand the international acceptance of light aircraft for multiple purposes by developing design standards for certification	OPS	33.6	46.6	932.0	112	115	108
Reduce environmental impact and economic costs of the marking and lighting of obstacles outside obstacle limitation surfaces (OLS) by amending prescriptive provisions requiring excessive lighting at night	AGA	33.3	48.9	782.0	113	104	122
Enhance air navigation capacity and efficiency by optimizing aerodrome designs to be capable of facilitating new types/derivatives of aircraft	AGA	33.3	47.0	752.0	114	112	124
Improve the consistency of aircraft operations standards by harmonizing the applicability, terminology and language	OPS	33.2	45.0	900.0	115	118	112
Improve flight trajectory optimization and safety through the enhancement of provisions relating to radioactive material in the atmosphere.	MET	33.1	48.0	960.0	116	108	102
3.5e Convene a symposium for new ATM concepts to support SWIM, FF-ICE, TBO and CDM	AN12	33.0	43.2	864.4	117	120	115
Enhance States' accident/incident investigation techniques and procedures through revised guidance material.	AIG	32.0	48.0	768.0	118	108	123
Reduce the tendency for the wrong aircraft to respond to ATC calls by expanding the pool of addresses through an improved SELCAL system	IIM	31.8	44.5	890.0	119	119	113
6.4 f) Dvelop guidance material on different categories of synthetic training devices and their respective usage (ATC) [some body check to make sure this is only ATC]	AN12	31.6	41.0	820.0	120	123	118
Reduction of monitoring costs associated to RVSM operations through improvement in data exchange among Regional Monitoring Agencies.	ATM	31.3	45.8	915.0	121	116	110

ANB Projects Prioritization

by Alternate Score (80% of Voting Score [No Resource])

Project	PROJECT ID	Alternate Score	Voting Score	Multiplier Score	Alternate Rank	Voting Rank	Multiplier Rank
CORE: Uphold the currency of Helicopter standards by including tilt-rotor aircraft	OPS	30.8	41.0	820.0	122	123	118
Ensure the availability of flight data for States' investigations by providing enhanced guidance for the maintenance of flight recorders.	AIG	30.7	42.8	855.0	123	121	116
Reduce human errors by providing a risk-based approach to managing fatigue in pilots for remotely piloted aircraft.	OPS	30.5	40.7	813.3	124	126	120
1.10 Consider use of self-organizing wireless data networks based on VDL Mode-4	AN12	30.2	41.8	585.2	125	122	131
1.15a Establish a set of common air navigation service performance metrics supported by guidance building on Doc 9883 (global performance manual) and Doc 9161(ATB?)	AN12	29.2	39.2	784.4	126	129	121
6.1 g) ICAO to review the current ammendment process to the ANPs and recommend improvements	AN12	28.8	41.0	656.0	127	123	127
Reduce runway incursions, passenger casualties and aircraft damage by the development of provisions for modern technological systems	AGA	28.7	40.5	648.0	128	127	128
Increase post-accident survival rates by using performance-based provisions for aerodrome/heliport emergency response	AGA	28.6	40.0	640.0	129	128	129
Improve safety through identification of investigation deficiencies by monitoring reports submitted by States.	AIG	28.1	37.5	600.0	130	131	130
Optimum runway utilization by efficient use of airfield pavements using pavement management system	AGA	27.5	38.3	382.5	131	130	132
Increase State's access to recorded flight data during investigations by means of enhanced provisions for their retrieval and the introduction of light-weight recorders.	AIG	23.3	33.5	670.0	132	132	126

ANB Projects Prioritization

by Voting Score

Project	PROJECT ID	Voting Score	Multiplier Score	Alternate Score	Alternate Rank	Voting Rank	Multiplier Rank
2.3 Security of Air Navigation	AN12	80.3	1,606.7	62.1	2	1	1
Identify potential gaps in safety regulations by developing and analysing information from a centralized dangerous goods incident and accident reporting system	DGS	79.6	1,592.5	61.4	5	2	2
1.6 Multidisciplinary review of ATC comm requirements and issues	AN12	78.8	1,575.6	61.7	3	3	3
1.11b Develop performance-based requirements for ATM automation systems so systems are interoperable	AN12	78.5	1,570.0	61.3	6	4	4
6.7 Continue technical evaluation of known threats to the global navigation satellite system, including space weather issues, and make the information available to States	AN12	78.0	1,560.0	61.6	4	5	5
3.2 & 3.3 Develop SWIM concept & Provisions	AN12	77.8	1,555.6	63.3	1	6	6
6.5 Continue development of SARPs and guidance for existing and future global navigation satellite system elements and encouraging the development of industry standards for avionics.	AN12	75.7	1,513.3	58.1	7	7	7
Establish the safe implementation of displays and vision systems in aircrafts by establishing standards and guidance material	OPS	74.8	1,496.7	57.1	11	8	8
2.6 Develop ICAO provisions for PBN for terminal and approach operation	AN12	74.2	1,484.4	57.5	9	9	9
1.12 Develop a comprehensive aviation frequency spectrum strategy	AN12	72.9	1,457.8	56.4	12	10	10
Improve the safety of flight operations by establishing requirements for cargo compartment fire suppression systems	OPS	72.7	1,453.3	55.7	14	11	11
Allow the safe integration of remotely piloted aircraft (RPA) by developing the regulatory framework to support operations in non-segregated airspace and at aerodromes	ATM	72.5	1,450.0	57.8	8	12	12
4.6c,d As a matter of urgency, develop the necessary regulatory framework in its entirety to support the integration of RPA into non-segregated airspace and at aerodromes including and clearly showing the scope of such regulation	AN12	71.8	1,435.6	57.2	10	13	13
1.14b ICAO and Member States pursue this matter [VSAT] in the ITU-R and during the WRC-15, to prevent any international mobile telecommunications spectrum allocation that compromises the availability of the aeronautical very small aperture terminal networks	AN12	71.2	1,139.6	53.0	16	14	64
To improve GNSS constellation availability and performance by introducing multiple GNSS constellations and frequencies of operations. (Infrastructure/PBN)	IIM	70.6	1,412.5	53.3	15	15	14
4.1d,e,f Standardization of elements to support CDM process underlying ATFM integration as well as of the technical exchanges between ATFM and ATC	AN12	70.2	1,404.4	55.9	13	16	15
Increase safety by ensuring forbidden dangerous goods do not enter the airmail stream through collaboration with the Universal Postal Union (UPU).	DGS	68.7	1,374.3	51.8	18	17	16
Reduction of runway excursions by effective runway surface condition assessment and friction reporting	AGA	67.9	1,357.1	49.7	28	18	17
Improve flight trajectory optimization and safety through the enhancement of the satellite distribution system and Internet-based service.	MET	67.9	1,357.1	50.4	24	18	17
6.9 Space weather : ICAO coordinate regional and global activities; adress GNSS vulnerabilities to space weather; and optimum use of space weather informtion	AN12	67.5	1,350.0	51.6	20	20	19
1.8 Explore strategies for decommissioning of some nav aids and ground stations...	AN12	66.8	1,336.0	49.8	27	21	20
Enhance air traffic management through consideration of four dimension trajectories - Latitude/ Longitude/ Altitude/ Time (TBO). (B1-40)	ATM	66.1	1,322.9	52.1	17	22	21
Enhance air traffic management through the sharing of information by creating interoperable standards for information exchange (SWIM) (B1-31)	ATM	65.6	1,312.5	51.7	19	23	22
Promote interagency working arrangements with other agencies of the United Nations in the development of harmonised, multi-modal transport provisions for dangerous goods	DGS	65.6	1,312.5	50.2	25	23	22
Improve levels of safety and security by harmonizing data link procedures to support seamless operations with respect to both surveillance and air-ground communications	ATM	65.6	1,312.5	51.4	21	23	22
Mitigate consequences of aircraft overrunning or undershooting a runway by developing performance-based provisions for runway end safety areas (RESA) and arresting systems	AGA	65.6	1,311.4	47.2	47	26	25
1.11a Develop global roadmap for evolution of ground ATM automation systems in line with ASBUs	AN12	65.4	1,308.0	51.0	23	27	26
6.2 ICAO develop an appropriate set of operation and economic incentive principles ...	AN12	65.3	1,306.7	51.1	22	28	27
Enhance surface situational awareness and improve runway safety and efficiency by using surface sequencing using ADS-B (B1-75 SURF/SURF IA)	IIM	65.3	1,305.7	49.0	35	29	28
Improve flight safety and efficiency through the further development of provisions that support the automated exchange of meteorological information to and from the cockpit via data link.	MET	65.1	1,302.9	49.3	33	30	29

ANB Projects Prioritization

by Voting Score

Project	PROJECT ID	Voting Score	Multiplier Score	Alternate Score	Alternate Rank	Voting Rank	Multiplier Rank
Promote interoperability and efficiency through the enhancement of provisions ensuring the exchange of meteorological information in a digital form compatible with SWIM	MET	65.1	1,302.9	49.3	33	30	29
Development of Flight Procedure, NAV database and charting requirements	ATM	64.8	1,295.0	48.6	38	32	31
6.4 e) Establish provisions for fatigue risk management within ATC operations.	AN12	64.7	1,293.3	48.5	40	33	32
Enhance safety and efficiency through standardization of information management. (B1-30)	ATM	64.5	1,290.0	48.7	37	34	33
Enhance States' capabilities in investigations by the availability of recorded video of the cockpit area.	AIG	64.3	1,285.0	48.8	36	35	34
1.9 Develop SARPs and guidance to support space-based ADS-B	AN12	64.0	1,280.0	49.4	31	36	35
2.2 Develop provisions for remotely operated ATS	AN12	63.9	1,277.8	49.8	26	37	36
Develop or amend policies, SARPs and related guidance to facilitate the increased exchange of safety information. Assure an appropriate level of protection for safety data and accident/incident information.	ISM	63.9	1,277.1	48.6	39	38	37
Increase safety, efficiency and capacity by developing globally harmonized PBN specification standards that meet operational requirements.	ATM	63.5	1,270.0	47.6	44	39	38
Improve efficiency by introducing GNSS-based all-weather operations (Cat II/III) supported by GBAS (B1-65)	IIM	63.1	1,262.5	47.9	43	40	39
Reduce loss of control events through enhanced management of cognitive and physiological responses associated with unexpected events	OPS	63.0	1,260.0	49.6	29	41	40
Reduce Loss of Control in-flight (LOC-I) accidents by providing training and licensing requirements, procedures and guidance.	OPS	63.0	1,260.0	49.6	29	41	40
Improve safety and efficiency through collaborative demand and capacity balancing and flow management procedures. (ATFM) (B0-35)	ATM	63.0	1,260.0	49.3	32	41	40
Establish the safe use and approval of electronic flight bags (EFBs) in aircrafts by establishing standards and guidance material	OPS	62.8	1,256.7	48.3	41	44	43
Facilitate approaches with vertical guidance by improving the operational benefits through eliminating confusion, extending the use to non-instrument runways and applying a performance-based approach for runway infrastructure.	ATM	62.4	1,247.5	47.3	46	45	44
Mitigate the hazards posed by space weather phenomena on international air navigation through the development of provisions for space weather information/services.	MET	62.3	1,245.7	47.3	45	46	45
Enhance airport capacity by promoting A-CDM	AGA	61.8	1,235.0	46.5	48	47	46
6.14 Guidelines for conducting aeronautical studies to assess permissible penetration of obstacle limitation surfaces	AN12	61.7	1,234.3	43.8	60	48	47
Improve flight trajectory optimization and safety through the enhancement of provisions relating to volcanic ash in the atmosphere.	MET	61.6	1,231.4	46.4	49	49	48
Ensure air navigation capacity and efficiency by integrating advances in technology and requirements for NexGen/SESAR in Aeronautical Information Services SARPS, related procedures and guidance material (B0-30, B1-30)	IIM	61.5	1,230.0	46.0	50	50	49
4.7e Define meteorological information exchange model as an enabler for system-wide information management	AN12	61.4	1,228.9	45.4	54	51	50
4.1g ICAO develop further provisions and guidance on flexible use of airspace principles for future use and in preparation for future 4d trajectory-based airspace management	AN12	61.3	981.3	45.9	51	52	95
Enhance safety and efficiency by improving the exchange of flight and flow information (FF-ICE) (B1-25)	ATM	61.0	1,220.0	48.0	42	53	51
Validate the MPL requirements by collecting implementation data and identifying areas where improvements are warranted through a proof of concept symposium	OPS	60.6	1,212.0	45.3	55	54	52
Improve flight trajectory optimization and safety through the enhancement of provisions relating to en-route hazardous meteorological conditions.	MET	60.6	1,211.4	44.9	56	55	53
Safer and efficient aerodrome operational management using PANS-Aerodromes	AGA	60.4	1,208.6	45.8	52	56	54
Improve safety of extended diversion time operations (EDTO) by including aeroplanes with more than two turbine engines	OPS	60.3	1,206.7	44.3	59	57	55
Optimize aerodrome capacity through the enhancement of provisions relating to the use of technology for meteorological conditions reporting at the aerodrome.	MET	59.0	1,180.0	43.3	63	58	56
Improve operational safety and efficiency in the AFI region by establishing strategic and tactical operational mitigation measures.	ATM	59.0	944.0	43.5	61	58	105
Optimize aerodrome capacity and improve safety through the enhancement of provisions relating to hazardous meteorological conditions at the aerodrome and in the terminal area.	MET	59.0	1,180.0	43.3	63	58	56
Optimize airspace and aerodrome capacity and efficiency through the enhanced provision of meteorological information tailored to meet the needs of the ATM community.	MET	59.0	1,180.0	43.3	63	58	56

ANB Projects Prioritization

by Voting Score

Project	PROJECT ID	Voting Score	Multiplier Score	Alternate Score	Alternate Rank	Voting Rank	Multiplier Rank
Enhance passenger safety by improving cabin crew training provisions	OPS	58.3	1,166.7	43.5	62	62	59
Optimize the use of resources by States and the MRO industry by developing a harmonized approach to the approval and recognition of approved maintenance organization (AMO)	OPS	58.2	1,164.0	44.8	57	63	60
Reduce runway incursions by the development of provisions for visual aids for Advanced Surface Movement Guidance and Control Systems (A-SMGCS)	AGA	57.5	1,150.0	42.8	69	64	61
Ensure the availability of flight recorder data for States' investigations of unmanned aircraft systems through the development of relevant provisions.	AIG	57.5	920.0	42.3	70	64	109
Improve the consistency of aircraft operations standards by aligning the provisions for General Aviation and Helicopters with Commercial Air Transport	OPS	57.2	1,143.3	42.9	66	66	62
6.1 h) i) j) k) and l) ICAO to develop a mechanism for sharing of best practices, define a methodology, develop guidance material, ... how to foster implementation to deliver on benefit (roll out plan)	AN12	57.2	1,143.3	44.5	58	67	63
Improve safety and efficiency of air transport by establishing standards and guidance material for fuel carriage.	OPS	56.8	1,136.7	41.1	80	68	65
Increase operational efficiency of aerodromes by the development of provisions for the implementation of light-emitting diode (LED) technology in visual aids	AGA	56.5	1,130.0	40.2	84	69	66
Ensure the availability of safety information by strengthening its protection from inappropriate use.	AIG	56.5	1,130.0	42.9	67	69	66
Improved implementation of new technologies and systems by consideration of Human performance issues at design stage.	OPS	56.4	1,128.0	42.9	68	71	68
Maximize efficiencies of flight operations over oceanic airspace, ensuring coincident improvements to levels of ATM security, by provision of direct, air-ground, voice communications via satellite	ATM	56.3	1,125.0	41.8	75	72	69
Provide access to optimum flight levels for aircrafts in oceanic airspace by establishing in-trail procedures using ADS-B (B0-86 ITP)	IIM	56.3	1,125.0	41.5	77	72	69
6.4 a) c) and d) Integrate human performance as an essential element for implementation of ASBU modules for considerations in the planning and design phase of new systems and technologies, as well as at the implementation phase, as part of a safety management approach.	AN12	56.2	1,123.3	45.7	53	74	71
Support the certification of composite aeroplanes by confirming that the design standards for airworthiness are still applicable for these new aircraft	OPS	56.0	1,120.0	42.2	71	75	72
Enhance global safety by further developing a new Annex dedicated to safety management processes and responsibilities.	ISM	55.9	1,117.1	41.5	79	76	73
Prevent runway incursions by utilizing proper naming conventions for designating taxiways, taxi lanes and runway and intermediate holding positions	AGA	55.8	1,115.0	41.7	76	77	74
4.3d,e,f Adopt coordinated approach towards reviewing and developing SARPs, PANS and guidance for ground-based and airborne safety nets	AN12	55.4	1,108.9	40.9	81	78	75
4.5e Develop guidelines on flexible use of airspace, airspace design, integration of humanitarian assistance flights in crisis response scenarios to facilitate integrated use of the airspace	AN12	55.3	885.3	39.5	87	79	114
4.7d Develop air traffic management meteorological information integration plan	AN12	55.0	1,100.0	41.9	73	80	76
4.3g ICAO incorporate ACAS X into its ICAO programme	AN12	55.0	1,100.0	41.9	73	80	76
3.9 Review current NOTAM system	AN12	54.8	1,095.6	42.0	72	82	78
Reduce PBN separation/route spacing by using more realistic ATM and navigational error assumptions and developing ATM procedures for busy traffic scenarios.	ATM	54.8	1,095.0	40.6	82	83	79
Prevent fuel contamination by developing provisions on the proper receipt, storage and distribution of aviation fuel at airports for commercial transport aircraft.	AGA	54.6	1,092.5	40.2	84	84	80

ANB Projects Prioritization

by Voting Score

Project	PROJECT ID	Voting Score	Multiplier Score	Alternate Score	Alternate Rank	Voting Rank	Multiplier Rank
6.13 Improve its project management and coordination of contributing ICAO panels, study groups and other groups tasked with the development of ICAO provisions, through: 1) consistent application of the Directives for Panels of the Air Navigation Commission (Doc 7984); 2) receiving regular reports from the expert groups against agreed terms of reference and work programmes; 3) mandating strong coordination between all expert groups developing ICAO provisions to ensure efficient management of issues and avoidance of duplication; 4) application of the principles of accountability, geographical representation, focus, efficiency, consistency, transparency and integrated planning to the operation of all the expert groups 5) developing documented procedures for other groups as well including task forces and other specialized teams as well ; and 6) better use of today's communication media and internet to facilitate virtual meetings, thereby increasing participation and reducing costs to States and ICAO;	AN12	54.1	1,082.9	41.5	78	85	81
6.12 c) Continue work on guidance material for the categorization of block upgrade modules for implementation priority and provide guidance as necessary to PIRGs and States	AN12	53.9	1,077.1	38.9	89	86	82
1.5 Define accuracy requirements for future use of a time reference. Prepare SARPs.	AN12	53.5	1,070.4	37.8	95	87	83
4.5d Develop a set of criteria or metrics to enable objective measurement of progress in civil/military cooperation	AN12	52.9	846.2	37.0	102	88	117
2.4 Optimize management of wake turbulence	AN12	52.9	740.4	39.2	88	89	125
Enhance States' resources in investigations by ensuring that recorded flight data transmissions are readily available for investigations.	AIG	52.8	1,055.0	38.1	92	90	84
Enhance the management of safety by defining global metrics and analysis methods used in identifying safety performance and risks in the context of a State Safety programme.	ISM	52.4	1,048.6	39.8	86	91	85
Improve pilot/ATC response to communications failure episodes by reviewing and updating the communications failure provisions	ATM	52.0	1,040.0	38.4	91	92	86
1.15b Promote development of leading safety indicators to complement existing lagging safety indicators	AN12	51.6	1,031.1	38.0	93	93	87
Reduce aircraft gross navigational errors by establishing concise global guidelines, procedures and SARPs related to the naming of significant waypoints	ATM	51.5	1,030.0	37.7	97	94	88
Reduce human errors by providing a risk-based approach to managing aviation maintenance engineer fatigue.	OPS	51.3	1,026.7	37.5	98	95	89
Amend SARPs on the upper age limit for pilots, to improve clarity and to increase ease of application by States and airlines	MED	51.3	1,025.7	37.8	94	96	90
Improve situational awareness and collision avoidance systems by establishing new provisions for Aeronautical Telecommunication standards and related guidance material.	IIM	51.3	1,025.7	40.2	83	96	90
6.12e) Identify modules in Block 1 considered to be essential for implementation at a global level in terms of the minimum path to global interoperability and safety with due regard to regional diversity.	AN12	51.1	1,022.9	37.0	101	98	92
Ensure air navigation capacity and efficiency by integrating advances in technology and requirements for NexGen/SESAR in Aeronautical charting SARPs and related guidance material (B0-30)	IIM	50.8	1,015.0	37.4	99	99	93
Reduce human errors by providing a risk-based approach to managing Air Traffic Controller (ATC) fatigue.	OPS	50.0	1,000.0	37.4	99	100	94
Maintain current levels of safety by requiring RPAs with the capability to detect all operationally significant obstacles and weather. (B1-90)	IIM	49.0	980.0	38.4	90	101	96
Reduce pressure on communications systems used in the en-route and terminal environments by developing guidance and SARPs for a broadband datalink to be used on the airport surface (B1-15; B1-25; B1-105; B1-40)	IIM	49.0	980.0	36.0	105	101	96
6.11 Initiate a formal amendment process to align the areas of applicability of the air navigation plans and the regional supplementary procedures	AN12	49.0	980.0	36.0	105	101	96
Reduce environmental impact and economic costs of the marking and lighting of obstacles outside obstacle limitation surfaces (OLS) by amending prescriptive provisions requiring excessive lighting at night	AGA	48.9	782.0	33.3	113	104	122
Reduce helicopter accidents/incidents by updating provisions for the design of heliports that take account of capabilities of modern helicopters	AGA	48.9	977.5	36.5	103	104	99
6.4 b) Develop guiding principles guidance material and provisions, including SARPs as necessary, on ATM personnel, licensing and training including instructors and licensing, and on the use of synthetic training devices,	AN12	48.7	973.3	37.7	96	106	100

ANB Projects Prioritization

by Voting Score

Project	PROJECT ID	Voting Score	Multiplier Score	Alternate Score	Alternate Rank	Voting Rank	Multiplier Rank
Prevention of accidents/damages to aircraft due to ingestion of FODs through the use of emerging technologies	AGA	48.5	970.0	35.6	107	107	101
Enhance States' accident/incident investigation techniques and procedures through revised guidance material.	AIG	48.0	768.0	32.0	118	108	123
Improve flight trajectory optimization and safety through the enhancement of provisions relating to radioactive material in the atmosphere.	MET	48.0	960.0	33.1	116	108	102
Promote safety management by providing standards for Safety Management Systems specific to organizations responsible for type design and manufacture of engine and propellers.	OPS	47.8	956.0	35.5	108	110	103
Enhance States' resolution of safety concerns by expanding guidance material on safety recommendations.	AIG	47.3	945.0	34.6	111	111	104
Enhance air navigation capacity and efficiency by optimizing aerodrome designs to be capable of facilitating new types/derivatives of aircraft	AGA	47.0	752.0	33.3	114	112	124
3.5d Investigate proposals for implementation of all PBN codes and other capabilities in the flight plan	AN12	47.0	940.0	34.7	110	112	106
Enhanced aerodrome safety and efficiency with effective implementation of aerodrome certification	AGA	47.0	940.0	34.7	109	112	106
Expand the international acceptance of light aircraft for multiple purposes by developing design standards for certification	OPS	46.6	932.0	33.6	112	115	108
Reduction of monitoring costs associated to RVSM operations through improvement in data exchange among Regional Monitoring Agencies.	ATM	45.8	915.0	31.3	121	116	110
6.3 ICAO to develop a networkwide operational improvement level assessment for global use	AN12	45.2	903.3	36.1	104	117	111
Improve the consistency of aircraft operations standards by harmonizing the applicability, terminology and language	OPS	45.0	900.0	33.2	115	118	112
Reduce the tendency for the wrong aircraft to respond to ATC calls by expanding the pool of addresses through an improved SELCAL system	IIM	44.5	890.0	31.8	119	119	113
3.5e Convene a symposium for new ATM concepts to support SWIM, FF-ICE, TBO and CDM	AN12	43.2	864.4	33.0	117	120	115
Ensure the availability of flight data for States' investigations by providing enhanced guidance for the maintenance of flight recorders.	AIG	42.8	855.0	30.7	123	121	116
1.10 Consider use of self-organizing wireless data networks based on VDL Mode-4	AN12	41.8	585.2	30.2	125	122	131
6.1 g) ICAO to review the current amendment process to the ANPs and recommend improvements	AN12	41.0	656.0	28.8	127	123	127
6.4 f) Develop guidance material on different categories of synthetic training devices and their respective usage (ATC) [some body check to make sure this is only ATC]	AN12	41.0	820.0	31.6	120	123	118
CORE: Uphold the currency of Helicopter standards by including tilt-rotor aircraft	OPS	41.0	820.0	30.8	122	123	118
Reduce human errors by providing a risk-based approach to managing fatigue in pilots for remotely piloted aircraft.	OPS	40.7	813.3	30.5	124	126	120
Reduce runway incursions, passenger casualties and aircraft damage by the development of provisions for modern technological systems	AGA	40.5	648.0	28.7	128	127	128
Increase post-accident survival rates by using performance-based provisions for aerodrome/heliport emergency response	AGA	40.0	640.0	28.6	129	128	129
1.15a Establish a set of common air navigation service performance metrics supported by guidance building on Doc 9883 (global performance manual) and Doc 9161(ATB?)	AN12	39.2	784.4	29.2	126	129	121
Optimum runway utilization by efficient use of airfield pavements using pavement management system	AGA	38.3	382.5	27.5	131	130	132
Improve safety through identification of investigation deficiencies by monitoring reports submitted by States.	AIG	37.5	600.0	28.1	130	131	130
Increase State's access to recorded flight data during investigations by means of enhanced provisions for their retrieval and the introduction of light-weight recorders.	AIG	33.5	670.0	23.3	132	132	126

ANB Projects Prioritization

by Multiplier Score

Project	PROJECT ID	Multiplier Score	Voting Score	Alternate Score	Alternate Rank	Voting Rank	Multiplier Rank
2.3 Security of Air Navigation	AN12	1,606.7	80.3	62.1	2	1	1
Identify potential gaps in safety regulations by developing and analysing information from a centralized dangerous goods incident and accident reporting system	DGS	1,592.5	79.6	61.4	5	2	2
1.6 Multidisciplinary review of ATC comm requirements and issues	AN12	1,575.6	78.8	61.7	3	3	3
1.11b Develop performance-based requirements for ATM automation systems so systems are interoperable	AN12	1,570.0	78.5	61.3	6	4	4
6.7 Continue technical evaluation of known threats to the global navigation satellite system, including space weather issues, and make the information available to States	AN12	1,560.0	78.0	61.6	4	5	5
3.2 & 3.3 Develop SWIM concept & Provisions	AN12	1,555.6	77.8	63.3	1	6	6
6.5 Continue development of SARPs and guidance for existing and future global navigation satellite system elements and encouraging the development of industry standards for avionics.	AN12	1,513.3	75.7	58.1	7	7	7
Establish the safe implementation of displays and vision systems in aircrafts by establishing standards and guidance material	OPS	1,496.7	74.8	57.1	11	8	8
2.6 Develop ICAO provisions for PBN for terminal and approach operation	AN12	1,484.4	74.2	57.5	9	9	9
1.12 Develop a comprehensive aviation frequency spectrum strategy	AN12	1,457.8	72.9	56.4	12	10	10
Improve the safety of flight operations by establishing requirements for cargo compartment fire suppression systems	OPS	1,453.3	72.7	55.7	14	11	11
Allow the safe integration of remotely piloted aircraft (RPA) by developing the regulatory framework to support operations in non-segregated airspace and at aerodromes	ATM	1,450.0	72.5	57.8	8	12	12
4.6c,d As a matter of urgency, develop the necessary regulatory framework in its entirety to support the integration of RPA into non-segregated airspace and at aerodromes including and clearly showing the scope of such regulation	AN12	1,435.6	71.8	57.2	10	13	13
1.14b ICAO and Member States pursue this matter [VSAT] in the ITU-R and during the WRC-15, to prevent any international mobile telecommunications spectrum allocation that compromises the availability of the aeronautical very small aperture terminal networks	AN12	1,139.6	71.2	53.0	16	14	64
To improve GNSS constellation availability and performance by introducing multiple GNSS constellations and frequencies of operations. (Infrastructure/PBN)	IIM	1,412.5	70.6	53.3	15	15	14
4.1d,e,f Standardization of elements to support CDM process underlying ATFM integration as well as of the technical exchanges between ATFM and ATC	AN12	1,404.4	70.2	55.9	13	16	15
Increase safety by ensuring forbidden dangerous goods do not enter the airmail stream through collaboration with the Universal Postal Union (UPU).	DGS	1,374.3	68.7	51.8	18	17	16
Reduction of runway excursions by effective runway surface condition assessment and friction reporting	AGA	1,357.1	67.9	49.7	28	18	17
Improve flight trajectory optimization and safety through the enhancement of the satellite distribution system and Internet-based service.	MET	1,357.1	67.9	50.4	24	18	17
6.9 Space weather : ICAO coordinate regional and global activities; adress GNSS vulnerabilities to space weather; and optimum use of space weather informtion	AN12	1,350.0	67.5	51.6	20	20	19
1.8 Explore strategies for decommissioning of some nav aids and ground stations...	AN12	1,336.0	66.8	49.8	27	21	20
Enhance air traffic management through consideration of four dimension trajectories - Latitude/ Longitude/ Altitude/ Time (TBO). (B1-40)	ATM	1,322.9	66.1	52.1	17	22	21
Enhance air traffic management through the sharing of information by creating interoperable standards for information exchange (SWIM) (B1-31)	ATM	1,312.5	65.6	51.7	19	23	22
Promote interagency working arrangements with other agencies of the United Nations in the development of harmonised, multi-modal transport provisions for dangerous goods	DGS	1,312.5	65.6	50.2	25	23	22
Improve levels of safety and security by harmonizing data link procedures to support seamless operations with respect to both surveillance and air-ground communications	ATM	1,312.5	65.6	51.4	21	23	22
Mitigate consequences of aircraft overrunning or undershooting a runway by developing performance-based provisions for runway end safety areas (RESA) and arresting systems	AGA	1,311.4	65.6	47.2	47	26	25
1.11a Develop global roadmap for evolution of ground ATM automation systems in line with ASBUs	AN12	1,308.0	65.4	51.0	23	27	26
6.2 ICAO develop an appropriate set of operation and economic incentive principles ...	AN12	1,306.7	65.3	51.1	22	28	27
Enhance surface situational awareness and improve runway safety and efficiency by using surface sequencing using ADS-B (B1-75 SURF/SURF IA)	IIM	1,305.7	65.3	49.0	35	29	28
Improve flight safety and efficiency through the further development of provisions that support the automated exchange of meteorological information to and from the cockpit via data link.	MET	1,302.9	65.1	49.3	33	30	29

ANB Projects Prioritization

by Multiplier Score

Project	PROJECT ID	Multiplier Score	Voting Score	Alternate Score	Alternate Rank	Voting Rank	Multiplier Rank
Promote interoperability and efficiency through the enhancement of provisions ensuring the exchange of meteorological information in a digital form compatible with SWIM	MET	1,302.9	65.1	49.3	33	30	29
Development of Flight Procedure, NAV database and charting requirements	ATM	1,295.0	64.8	48.6	38	32	31
6.4 e) Establish provisions for fatigue risk management within ATC operations.	AN12	1,293.3	64.7	48.5	40	33	32
Enhance safety and efficiency through standardization of information management. (B1-30)	ATM	1,290.0	64.5	48.7	37	34	33
Enhance States' capabilities in investigations by the availability of recorded video of the cockpit area.	AIG	1,285.0	64.3	48.8	36	35	34
1.9 Develop SARPs and guidance to support space-based ADS-B	AN12	1,280.0	64.0	49.4	31	36	35
2.2 Develop provisions for remotely operated ATS	AN12	1,277.8	63.9	49.8	26	37	36
Develop or amend policies, SARPs and related guidance to facilitate the increased exchange of safety information. Assure an appropriate level of protection for safety data and accident/incident information.	ISM	1,277.1	63.9	48.6	39	38	37
Increase safety, efficiency and capacity by developing globally harmonized PBN specification standards that meet operational requirements.	ATM	1,270.0	63.5	47.6	44	39	38
Improve efficiency by introducing GNSS-based all-weather operations (Cat II/III) supported by GBAS (B1-65)	IIM	1,262.5	63.1	47.9	43	40	39
Reduce loss of control events through enhanced management of cognitive and physiological responses associated with unexpected events	OPS	1,260.0	63.0	49.6	29	41	40
Reduce Loss of Control in-flight (LOC-I) accidents by providing training and licensing requirements, procedures and guidance.	OPS	1,260.0	63.0	49.6	29	41	40
Improve safety and efficiency through collaborative demand and capacity balancing and flow management procedures. (ATFM) (B0-35)	ATM	1,260.0	63.0	49.3	32	41	40
Establish the safe use and approval of electronic flight bags (EFBs) in aircrafts by establishing standards and guidance material	OPS	1,256.7	62.8	48.3	41	44	43
Facilitate approaches with vertical guidance by improving the operational benefits through eliminating confusion, extending the use to non-instrument runways and applying a performance-based approach for runway infrastructure.	ATM	1,247.5	62.4	47.3	46	45	44
Mitigate the hazards posed by space weather phenomena on international air navigation through the development of provisions for space weather information/services.	MET	1,245.7	62.3	47.3	45	46	45
Enhance airport capacity by promoting A-CDM	AGA	1,235.0	61.8	46.5	48	47	46
6.14 Guidelines for conducting aeronautical studies to assess permissible penetration of obstacle limitation surfaces	AN12	1,234.3	61.7	43.8	60	48	47
Improve flight trajectory optimization and safety through the enhancement of provisions relating to volcanic ash in the atmosphere.	MET	1,231.4	61.6	46.4	49	49	48
Ensure air navigation capacity and efficiency by integrating advances in technology and requirements for NexGen/SESAR in Aeronautical Information Services SARPS, related procedures and guidance material (B0-30, B1-30)	IIM	1,230.0	61.5	46.0	50	50	49
4.7e Define meteorological information exchange model as an enabler for system-wide information management	AN12	1,228.9	61.4	45.4	54	51	50
4.1g ICAO develop further provisions and guidance on flexible use of airspace principles for future use and in preparation for future 4d trajectory-based airspace management	AN12	981.3	61.3	45.9	51	52	95
Enhance safety and efficiency by improving the exchange of flight and flow information (FF-ICE) (B1-25)	ATM	1,220.0	61.0	48.0	42	53	51
Validate the MPL requirements by collecting implementation data and identifying areas where improvements are warranted through a proof of concept symposium	OPS	1,212.0	60.6	45.3	55	54	52
Improve flight trajectory optimization and safety through the enhancement of provisions relating to en-route hazardous meteorological conditions.	MET	1,211.4	60.6	44.9	56	55	53
Safer and efficient aerodrome operational management using PANS-Aerodromes	AGA	1,208.6	60.4	45.8	52	56	54
Improve safety of extended diversion time operations (EDTO) by including aeroplanes with more than two turbine engines	OPS	1,206.7	60.3	44.3	59	57	55
Optimize aerodrome capacity through the enhancement of provisions relating to the use of technology for meteorological conditions reporting at the aerodrome.	MET	1,180.0	59.0	43.3	63	58	56
Improve operational safety and efficiency in the AFI region by establishing strategic and tactical operational mitigation measures.	ATM	944.0	59.0	43.5	61	58	105
Optimize aerodrome capacity and improve safety through the enhancement of provisions relating to hazardous meteorological conditions at the aerodrome and in the terminal area.	MET	1,180.0	59.0	43.3	63	58	56
Optimize airspace and aerodrome capacity and efficiency through the enhanced provision of meteorological information tailored to meet the needs of the ATM community.	MET	1,180.0	59.0	43.3	63	58	56

ANB Projects Prioritization

by Multiplier Score

Project	PROJECT ID	Multiplier Score	Voting Score	Alternate Score	Alternate Rank	Voting Rank	Multiplier Rank
Enhance passenger safety by improving cabin crew training provisions	OPS	1,166.7	58.3	43.5	62	62	59
Optimize the use of resources by States and the MRO industry by developing a harmonized approach to the approval and recognition of approved maintenance organization (AMO)	OPS	1,164.0	58.2	44.8	57	63	60
Reduce runway incursions by the development of provisions for visual aids for Advanced Surface Movement Guidance and Control Systems (A-SMGCS)	AGA	1,150.0	57.5	42.8	69	64	61
Ensure the availability of flight recorder data for States' investigations of unmanned aircraft systems through the development of relevant provisions.	AIG	920.0	57.5	42.3	70	64	109
Improve the consistency of aircraft operations standards by aligning the provisions for General Aviation and Helicopters with Commercial Air Transport	OPS	1,143.3	57.2	42.9	66	66	62
6.1 h) i) j) k) and l) ICAO to develop a mechanism for sharing of best practices, define a methodology, develop guidance material, ... how to foster implementation to deliver on benefit (roll out plan)	AN12	1,143.3	57.2	44.5	58	67	63
Improve safety and efficiency of air transport by establishing standards and guidance material for fuel carriage.	OPS	1,136.7	56.8	41.1	80	68	65
Increase operational efficiency of aerodromes by the development of provisions for the implementation of light-emitting diode (LED) technology in visual aids	AGA	1,130.0	56.5	40.2	84	69	66
Ensure the availability of safety information by strengthening its protection from inappropriate use.	AIG	1,130.0	56.5	42.9	67	69	66
Improved implementation of new technologies and systems by consideration of Human performance issues at design stage.	OPS	1,128.0	56.4	42.9	68	71	68
Maximize efficiencies of flight operations over oceanic airspace, ensuring coincident improvements to levels of ATM security, by provision of direct, air-ground, voice communications via satellite	ATM	1,125.0	56.3	41.8	75	72	69
Provide access to optimum flight levels for aircrafts in oceanic airspace by establishing in-trail procedures using ADS-B (B0-86 ITP)	IIM	1,125.0	56.3	41.5	77	72	69
6.4 a) c) and d) Integrate human performance as an essential element for implementation of ASBU modules for considerations in the planning and design phase of new systems and technologies, as well as at the implementation phase, as part of a safety management approach.	AN12	1,123.3	56.2	45.7	53	74	71
Support the certification of composite aeroplanes by confirming that the design standards for airworthiness are still applicable for these new aircraft	OPS	1,120.0	56.0	42.2	71	75	72
Enhance global safety by further developing a new Annex dedicated to safety management processes and responsibilities.	ISM	1,117.1	55.9	41.5	79	76	73
Prevent runway incursions by utilizing proper naming conventions for designating taxiways, taxi lanes and runway and intermediate holding positions	AGA	1,115.0	55.8	41.7	76	77	74
4.3d,e,f Adopt coordinated approach towards reviewing and developing SARPs, PANS and guidance for ground-based and airborne safety nets	AN12	1,108.9	55.4	40.9	81	78	75
4.5e Develop guidelines on flexible use of airspace, airspace design, integration of humanitarian assistance flights in crisis response scenarios to facilitate integrated use of the airspace	AN12	885.3	55.3	39.5	87	79	114
4.7d Develop air traffic management meteorological information integration plan	AN12	1,100.0	55.0	41.9	73	80	76
4.3g ICAO incorporate ACAS X into its ICAO programme	AN12	1,100.0	55.0	41.9	73	80	76
3.9 Review current NOTAM system	AN12	1,095.6	54.8	42.0	72	82	78
Reduce PBN separation/route spacing by using more realistic ATM and navigational error assumptions and developing ATM procedures for busy traffic scenarios.	ATM	1,095.0	54.8	40.6	82	83	79
Prevent fuel contamination by developing provisions on the proper receipt, storage and distribution of aviation fuel at airports for commercial transport aircraft.	AGA	1,092.5	54.6	40.2	84	84	80

ANB Projects Prioritization

by Multiplier Score

Project	PROJECT ID	Multiplier Score	Voting Score	Alternate Score	Alternate Rank	Voting Rank	Multiplier Rank
6.13 Improve its project management and coordination of contributing ICAO panels, study groups and other groups tasked with the development of ICAO provisions, through: 1) consistent application of the Directives for Panels of the Air Navigation Commission (Doc 7984); 2) receiving regular reports from the expert groups against agreed terms of reference and work programmes; 3) mandating strong coordination between all expert groups developing ICAO provisions to ensure efficient management of issues and avoidance of duplication; 4) application of the principles of accountability, geographical representation, focus, efficiency, consistency, transparency and integrated planning to the operation of all the expert groups 5) developing documented procedures for other groups as well including task forces and other specialized teams as well ; and 6) better use of today's communication media and internet to facilitate virtual meetings, thereby increasing participation and reducing costs to States and ICAO;	AN12	1,082.9	54.1	41.5	78	85	81
6.12 c) Continue work on guidance material for the categorization of block upgrade modules for implementation priority and provide guidance as necessary to PIRGs and States	AN12	1,077.1	53.9	38.9	89	86	82
1.5 Define accuracy requirements for future use of a time reference. Prepare SARPs.	AN12	1,070.4	53.5	37.8	95	87	83
4.5d Develop a set of criteria or metrics to enable objective measurement of progress in civil/military cooperation	AN12	846.2	52.9	37.0	102	88	117
2.4 Optimize management of wake turbulence	AN12	740.4	52.9	39.2	88	89	125
Enhance States' resources in investigations by ensuring that recorded flight data transmissions are readily available for investigations.	AIG	1,055.0	52.8	38.1	92	90	84
Enhance the management of safety by defining global metrics and analysis methods used in identifying safety performance and risks in the context of a State Safety programme.	ISM	1,048.6	52.4	39.8	86	91	85
Improve pilot/ATC response to communications failure episodes by reviewing and updating the communications failure provisions	ATM	1,040.0	52.0	38.4	91	92	86
1.15b Promote development of leading safety indicators to complement existing lagging safety indicators	AN12	1,031.1	51.6	38.0	93	93	87
Reduce aircraft gross navigational errors by establishing concise global guidelines, procedures and SARPs related to the naming of significant waypoints	ATM	1,030.0	51.5	37.7	97	94	88
Reduce human errors by providing a risk-based approach to managing aviation maintenance engineer fatigue.	OPS	1,026.7	51.3	37.5	98	95	89
Amend SARPs on the upper age limit for pilots, to improve clarity and to increase ease of application by States and airlines	MED	1,025.7	51.3	37.8	94	96	90
Improve situational awareness and collision avoidance systems by establishing new provisions for Aeronautical Telecommunication standards and related guidance material.	IIM	1,025.7	51.3	40.2	83	96	90
6.12e) Identify modules in Block 1 considered to be essential for implementation at a global level in terms of the minimum path to global interoperability and safety with due regard to regional diversity.	AN12	1,022.9	51.1	37.0	101	98	92
Ensure air navigation capacity and efficiency by integrating advances in technology and requirements for NexGen/SESAR in Aeronautical charting SARPS and related guidance material (B0-30)	IIM	1,015.0	50.8	37.4	99	99	93
Reduce human errors by providing a risk-based approach to managing Air Traffic Controller (ATC) fatigue.	OPS	1,000.0	50.0	37.4	99	100	94
Maintain current levels of safety by requiring RPAs with the capability to detect all operationally significant obstacles and weather. (B1-90)	IIM	980.0	49.0	38.4	90	101	96
Reduce pressure on communications systems used in the en-route and terminal environments by developing guidance and SARPs for a broadband datalink to be used on the airport surface (B1-15; B1-25; B1-105; B1-40)	IIM	980.0	49.0	36.0	105	101	96
6.11 Initiate a formal amendment process to align the areas of applicability of the air navigation plans and the regional supplementary procedures	AN12	980.0	49.0	36.0	105	101	96
Reduce environmental impact and economic costs of the marking and lighting of obstacles outside obstacle limitation surfaces (OLS) by amending prescriptive provisions requiring excessive lighting at night	AGA	782.0	48.9	33.3	113	104	122
Reduce helicopter accidents/incidents by updating provisions for the design of heliports that take account of capabilities of modern helicopters	AGA	977.5	48.9	36.5	103	104	99
6.4 b) Develop guiding principles guidance material and provisions, including SARPs as necessary, on ATM personnel, licensing and training including instructors and licensing, and on the use of synthetic training devices,	AN12	973.3	48.7	37.7	96	106	100

ANB Projects Prioritization

by Multiplier Score

Project	PROJECT ID	Multiplier Score	Voting Score	Alternate Score	Alternate Rank	Voting Rank	Multiplier Rank
Prevention of accidents/damages to aircraft due to ingestion of FODs through the use of emerging technologies	AGA	970.0	48.5	35.6	107	107	101
Enhance States' accident/incident investigation techniques and procedures through revised guidance material.	AIG	768.0	48.0	32.0	118	108	123
Improve flight trajectory optimization and safety through the enhancement of provisions relating to radioactive material in the atmosphere.	MET	960.0	48.0	33.1	116	108	102
Promote safety management by providing standards for Safety Management Systems specific to organizations responsible for type design and manufacture of engine and propellers.	OPS	956.0	47.8	35.5	108	110	103
Enhance States' resolution of safety concerns by expanding guidance material on safety recommendations.	AIG	945.0	47.3	34.6	111	111	104
Enhance air navigation capacity and efficiency by optimizing aerodrome designs to be capable of facilitating new types/derivatives of aircraft	AGA	752.0	47.0	33.3	114	112	124
3.5d Investigate proposals for implementation of all PBN codes and other capabilities in the flight plan	AN12	940.0	47.0	34.7	110	112	106
Enhanced aerodrome safety and efficiency with effective implementation of aerodrome certification	AGA	940.0	47.0	34.7	109	112	106
Expand the international acceptance of light aircraft for multiple purposes by developing design standards for certification	OPS	932.0	46.6	33.6	112	115	108
Reduction of monitoring costs associated to RVSM operations through improvement in data exchange among Regional Monitoring Agencies.	ATM	915.0	45.8	31.3	121	116	110
6.3 ICAO to develop a networkwide operational improvement level assessment for global use	AN12	903.3	45.2	36.1	104	117	111
Improve the consistency of aircraft operations standards by harmonizing the applicability, terminology and language	OPS	900.0	45.0	33.2	115	118	112
Reduce the tendency for the wrong aircraft to respond to ATC calls by expanding the pool of addresses through an improved SELCAL system	IIM	890.0	44.5	31.8	119	119	113
3.5e Convene a symposium for new ATM concepts to support SWIM, FF-ICE, TBO and CDM	AN12	864.4	43.2	33.0	117	120	115
Ensure the availability of flight data for States' investigations by providing enhanced guidance for the maintenance of flight recorders.	AIG	855.0	42.8	30.7	123	121	116
1.10 Consider use of self-organizing wireless data networks based on VDL Mode-4	AN12	585.2	41.8	30.2	125	122	131
6.1 g) ICAO to review the current amendment process to the ANPs and recommend improvements	AN12	656.0	41.0	28.8	127	123	127
6.4 f) Develop guidance material on different categories of synthetic training devices and their respective usage (ATC) [some body check to make sure this is only ATC]	AN12	820.0	41.0	31.6	120	123	118
CORE: Uphold the currency of Helicopter standards by including tilt-rotor aircraft	OPS	820.0	41.0	30.8	122	123	118
Reduce human errors by providing a risk-based approach to managing fatigue in pilots for remotely piloted aircraft.	OPS	813.3	40.7	30.5	124	126	120
Reduce runway incursions, passenger casualties and aircraft damage by the development of provisions for modern technological systems	AGA	648.0	40.5	28.7	128	127	128
Increase post-accident survival rates by using performance-based provisions for aerodrome/heliport emergency response	AGA	640.0	40.0	28.6	129	128	129
1.15a Establish a set of common air navigation service performance metrics supported by guidance building on Doc 9883 (global performance manual) and Doc 9161(ATB?)	AN12	784.4	39.2	29.2	126	129	121
Optimum runway utilization by efficient use of airfield pavements using pavement management system	AGA	382.5	38.3	27.5	131	130	132
Improve safety through identification of investigation deficiencies by monitoring reports submitted by States.	AIG	600.0	37.5	28.1	130	131	130
Increase State's access to recorded flight data during investigations by means of enhanced provisions for their retrieval and the introduction of light-weight recorders.	AIG	670.0	33.5	23.3	132	132	126

Working Group on Strategic Review and Planning – ANWP Amendment Input Form (Job-card)

PART I				
Category	Safety	Sustainability	Implementation	Reference:
Title				
Proposed by				
Problem Statement				
Specific Details (including impact statements)				
PART II				
Rating	High	Medium	Low	
Rationale for acceptance/rejection				
Action already in progress				
Interdependencies/References				
Required Action	By Whom/Resources	Deliverables	Timescales (for deliverable)	
1				
2				
3				
4				
Issue Date:	Date Assessed by SRP:	Date Approved by ANC:	Next Review Date:	Completed Date:

